AMERICAN MUSEUM NOVITATES

Number 542 — Published by The American Museum of Natural History New York City — June 20, 1932

59. 76 (76.2)

A SURVEY OF THE AMPHIBIANS AND REPTILES OF HARRISON COUNTY, MISSISSIPPI

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The following annotated list, a representative collection of which has been deposited in The American Museum of Natural History, embraces 87 species: 11 salamanders; 21 frogs; 1 alligator; 7 lizards; 32 snakes; and 15 turtles. It is based on collecting carried on from October 1929 to January 1932, in an area extending from the coast of the Gulf of Mexico to a point about twenty miles inland. In addition to the work done by Mr. Stewart Springer and the author, the youth of Biloxi were induced to search the surrounding woods and swamps and the result of their collecting has materially aided in obtaining a survey that otherwise might not have been so complete. Contact with inland inhabitants was also of value in this respect. An accurate check has been kept on only about half of the specimens secured, but an estimate of 2000 for the total number would hardly be excessive.

While Louisiana, Alabama, and western Tennessee have received attention from a herpetological standpoint, Mississippi has been neglected, and even though this list represents but a small portion of the State, nevertheless it fills a gap in our knowledge of the distribution of forms on the Gulf coast.

The chief works relating directly to Mississippi herpetology are Brimley's 'Records of some Amphibians and Reptiles from the Southeastern United States' (1910, Proc. Biol. Soc. Wash., XXIII, pp. 9–18), and Corrington's 'Field Notes on some Amphibians and Reptiles at Biloxi, Mississippi' (1927, Copeia, 165, pp. 98–102). All of the thirty-nine species recorded by Brimley from Bay St. Louis are included in the present paper, with the exception of *Pseudacris occidentalis* and *Thamnophis sackenii*. He lists *Diemyctylus viridescens*, but in my copy of the paper he has noted that the specimens were of a subspecies, and I am inclined to believe that they were referable to *Triturus meridionalis*. Corrington reports twenty-six species, all of which are mentioned in this article except *Bufo americanus*. In almost two and one-half years of intensive collecting the author has examined hundreds of toads and none was found to be of this species. Believing its occurrence in this region

to be extremely doubtful, I am inclined to the opinion that Corrington's examples were referable to *Bufo terrestris*, especially since he does not mention this species.

The region may be divided roughly into two sections. Along the coast occurs a low, flat country of thick swamps, brackish marshes, and wet, acid meadows which are usually dry in summer. The streams are sluggish, winding, and affected by the tides in their lower reaches. Twenty to thirty miles inland there is a region of low hills which to the east slopes off into the Pascagoula Swamp.

Agkistrodon mokasen and *Ambystoma opacum* have not been seen on the coast but both were found in the swampy type of country near Basin, George County.

Because of promiscuous timber cutting in the past, there is an abundance of stumps throughout the second-growth pine woods. Beneath the loose bark of these stumps and fallen logs many species find concealment and situations for temporary hibernation. Uninterrupted hibernation for the winter is usually prevented by the erratic temperatures common to that season. Prevailing southerly winds cause the temperature to rise and a number of the forms bestir themselves, but return to their hiding places when a north wind again brings cold weather.

Midwinter and early spring are usually attended by abundant rain, and while the summers may be rather dry, more frequently they are quite moist. For the coast the average annual precipitation is over sixty inches.

The author is indebted to Mr. Stewart Springer for his work in the field, to Dr. F. N. Blanchard for the identification of certain snakes, to Dr. E. R. Dunn and Dr. A. H. Wright for the identification of *Pseudotriton montanus flavissimus* and *Rana heckscheri*, and especially to Dr. G. K. Noble for his criticisms and advice concerning the manuscript and the identification of the *Pseudacris*.

Part I.—AMPHIBIA

Caudata

Amphiuma means Garden.—A common form in this region, but its secretive habits might easily lead to the misconception that it is rare. Muddy pools in the vicinity of Biloxi have yielded a number of specimens, most of which were taken at night. Heavy rains in the midsummer of 1931 caused the streams to overflow and several examples of varying size were found in the daytime in a backwater along a road on the north shore of the bay of Biloxi.

That this animal is very tenacious of life is shown by the fact that specimens have lived for two or three days after they had been speared. An example two and a half feet long was found on August 19, 1931, and even though its back was broken, with the consequence that it was unable to control the posterior part of its body, it lived for ten days and exhibited no signs of discomfort other than to regurgitate two frogs (*Acris gryllus*).

It is hardy in captivity and capable of abstaining from food for a long period of time. However, it is quite voracious if given the opportunity and has been observed to eat smaller individuals of its own kind, *Siren*, fish, and earthworms.

Triturus meridionalis (COPE).—There is some doubt as to the true status of this form as it is known on the Gulf coast. The check list (1923) defines the range of *meridionalis* as "Southern Georgia to Louisiana, Texas and Tamaulipas." Our specimens agree with a series from Florida and Louisiana.

In Harrison County this species could be considered uncommon, since only about a half-dozen specimens have been secured. A large aquatic adult containing eggs was taken from a ditch in April, 1931. Other examples, found in December, January, and February, were recently metamorphosed. They were discovered within rotten pine stumps and logs in thick woods bordering swamps.

Ambystoma maculatum (SHAW).—Rare. Only one specimen was found, November 21, 1930, beneath a log in a swamp twelve miles south of Vestry near the Harrison–Jackson county-line.

Ambystoma talpoideum (HOLBROOK).—Not uncommon, as the numbers found during the breeding season indicate, but seldom encountered at other times of the year. On the site of a deserted sawmill close to a large pile of sawdust, on February 12, 1930, eleven specimens were discovered in a hole some three feet deep, at the bottom of which were two or three inches of water. The salamanders were breeding and eggs were present. The two other specimens taken were found beneath leaves near a pond of rain-water on December 2 of the same year.

On April 20, 1931, a large series of larvæ, measuring from 25 to 60 mm., were taken from a pond, and up until May 15 others in different stages of development were found in small pools. When leading a strictly aquatic existence their food seemed to consist largely of mosquito larvæ, though while in the laboratory they also ate readily small bits of

bread and meat. Their cannabilistic tendencies were apparent from the fact that no matter how well fed, they attacked others of their own kind and small tadpoles.

Of the majority of those taken on April 20, the gills were practically absent by May 14, and on the average the specimens had increased about 10 mm. in length. About May 14, a number were found without gills and measuring 55 to 70 mm. These specimens were taken from under logs and among moist leaves in the bed of a dried pool. In coloration they closely resembled the adult, as the striped appearance described below was entirely absent. At the termination of the process of gill absorption, the length of examples varied from 50 to 65 mm.

DESCRIPTION OF LARVÆ.—Length, 25 to 60 mm. Costal grooves, 9 to 10. Width of head in total length 6 times. Length of head in total length 5.2 times. Distance from axilla to snout same as distance from axilla to groin. Digits, 4–5. Tail long, as long as, or longer than the body. A prominent dorsal fin, extending from the head to the end of the tail; a ventral fin, slightly less conspicuous, from the vent to the tip of the tail. Limbs fairly well developed, anterior ones more so than posterior pair, and meeting or overlapping when pressed along the side. Three pairs of prominent gills. Mouth well developed; labial folds present laterally. Eyes small, dorsolateral in position. Head large, depressed. Body compressed.

Fins speckled with black. Dorsally the body is dark, with lighter blotches. On either side a whitish or yellowish stripe extends from the gills to a point just posterior to vent. Below this is a wider, darker band somewhat speckled with the light ventral color. Limbs light, sprinkled with black. Belly light. Throat light, finely sprinkled with darker. Top of head similar to dorsal light blotches. A dark line extends from the snout through the eye to base of gills. A light band just below this and another dark line along jaw extending to base of gills.

Plethodon glutinosus (GREEN).—The commonest salamander of the region. Throughout the winter they are abundant beneath logs in the swamps, but at the approach of warm weather they become scarce in their winter retreats, and with the advent of summer they seem to disappear, as only an occasional one can be found.

This species, as it is found on the coast, is smaller and less spotted than those I have seen in the northern parts of its range. These differences have also been detected upon comparison of a series from Biloxi with a series from about fifty to seventy-five miles inland. Several examples have been discovered in which the spots were totally obsolete.

Manculus quadridigitatus quadridigitatus (HOLBROOK).—Found occasionally under logs in the swamps during the winter and spring. Rarely seen throughout the remaining seasons.

Pseudotriton montanus flavissimus (HALLOWELL).—Rather a rare species, only four specimens having been taken. On December 17, 1929, a specimen 80 mm. in length was found under the bark of a rotten log on the edge of a swamp. A second one, 88 mm. long, less spotted and of a more uniform color than the preceding, was found nearby in a similar habitat. A year later, December 27, 1930, within fifty yards of the previous captures, a typically spotted individual 93 mm. in length was discovered beneath a log. In November, 1930, another specimen was plowed up in a field south of Vestry.

Eurycea bislineata cirrigera (GREEN).—A salamander that can scarcely be considered common. It seems to prefer the swamps and other moist places that afford ground-cover. One specimen was taken from the side of a tree, about six feet from the ground, on a rainy night in November, 1930.

Eurycea gutto-lineata (HOLBROOK).—Seldom seen except during the winter. Two specimens were found under logs in a swamp on February 2, 1930. No more were observed until December 3 of the same year when seven were taken from concealment near a deep pond. At about the same time a lot of nine was brought in from south of Vestry and in the following March, twelve were secured about the margins of the pool mentioned above. On January 1, 1932, two small specimens were found under logs in sandy soil close to a small stream.

Desmognathus fuscus auriculatus (HOLBROOK).—This species is a common inhabitant of the swamps. It takes advantage of the protection of logs and stumps, provided they are situated in wet places. It seems to be more frequently taken during the winter, being seldom seen throughout the summer.

This is another form that is possibly confined to the Gulf coast and distinct from the Atlantic coastal plain subspecies to which it is here referred.

Siren intermedia LECONTE.—A species undoubtedly common in this region but infrequently seen because of its habits. A specimen 275 mm. in length was taken from a roadside ditch near Biloxi on March 9, 1931. Several others of smaller size from the vicinity of Biloxi and two from a spring south of Vestry.

Search among the wet, muddy leaves surrounding a slowly evaporating pond resulted in the discovery of many young 23 to 25 mm. long. The definite color pattern consists of a pale mid-dorsal line from the

posterior extremity of head to the end of tail; a yellow transverse line on dorsal surface of head; a yellow mark above the eyes; snout yellow; a yellow line along side of head below eye; ground color black. These young seemed to be quite delicate and attempts to keep them alive proved unsuccessful. They were found on April 28, 1931, in company with the larvæ of *Eurycea gutto-lineata* at the same pond where the adults of the latter species had been taken previously.

SALIENTIA

Scaphiopus holbrookii holbrookii (HARLAN).—This species has been met with four different times. On the night of October 15, 1930, during a hard rain, eighteen specimens were secured. A rainy night in the following March yielded 219 specimens from ponds in which they were breeding. Four others were found south of Vestry, likewise at night in a hard rain, and a single individual was discovered hopping along the concrete of the beach road in Biloxi on a dry night in July.

Bufo fowleri GARMAN.—An examination of about 350 toads has resulted in the discovery of two specimens referable to this species. I do not recall having heard the voice of this toad at any time. Its occurrence in this region is certainly beyond dispute, but it must be very rare.

Bufo terrestris BONNATERRE.—These toads are very common and can be collected at practically any time of the year. Midday heat forces them to take advantage of the shade of various farm buildings or the retreat of log or stump, but dusk finds them hopping about the fields and roadways. On warm, rainy nights they come forth in numbers and their predilection for the paved highway causes a reduction in their numbers.

The first week of March, 1931, was unusually warm and attended by abundant rain. At this time breeding toads were very numerous in flooded meadows, ditches and ponds. Their voices were incessant day and night until the rain ceased and cold weather set in. At no other time has this species been observed to breed.

Four very large specimens were taken on Cat Island, February 19, 1930. Two were found along the beach beneath a board under which they had burrowed so far into the sand that only their snouts were exposed. The other two were discovered farther inland in the grass.

Bufo quercicus HOLBROOK.—For over a year and a half this species seemed to be totally absent from the fauna. Search was finally rewarded

however, and my notes dated June 8, 1931 read thus: three miles north of Biloxi, six found in a small, wet depression near a pond; later several more discovered in the grass about the margin of another pool, on the surface of which were to be seen small patches of eggs; each egg separate but congregated with its fellows into groups; egg 1 mm. in diameter, capsule 4 to 5 mm.; the greater number in the neural groove stage with a few in cleavage. These were brought to the laboratory and the development observed to be rapid, but none of the tadpoles lived to grow beyond a length of 10 mm.

A month later heavy rains filled the pools in the swamps and the oak toads became numerous but were perceptible for only a short time, for when the rains ceased they disappeared.

Acris gryllus (LeConte).—The cricket-frog is the commonest amphibian in this region. They abound in the shaded swamps and exhibit a preference for grassy areas and piles of debris about the margins of pools. On the coldest days they can be found leaping about erratically.

Pseudacris nigrita (LeConte).—This species has been found to be abundant through the winter and early spring, but what becomes of it during the summer remains a problem. Even on chilly nights they may be heard calling from the wet grasslands, rain-water pools and roadside ditches, but on warmer evenings, especially in rainy weather, the volume of their voices is much augmented. Because of their propensity for hiding in clumps of grass half submerged in the water these frogs are difficult to collect in numbers.

Several pairs were taken in copulation on December 15, 1929, and forty-two breeding pairs and some clumps of eggs were secured in daylight on January 20, 1931.

Pseudacris ornata (Holbrook).—Not a common species. It is encountered only in the winter and spring. Dickerson, in the 'Frog Book' (p. 161) says, "this frog is said to live on land, in relatively dry places, such as corn-fields. That it shuns bodies of water except during the breeding season might be judged from the smallness of the webs on its feet." It has been found in copulation in grassland pools in November and December and solitary individuals have been taken in similar habitats until February. Its call, a single high note much resembling that of *Hyla crucifer* but lacking the trill, has been heard on both warm and cold nights.

Pseudacris triseriata (WIED).—Six specimens taken in company with *P. nigrita*. Dr. G. K. Noble kindly examined a puzzling series of *Pseudacris* and from it selected four that seemed to be of this species. An examination of additional material by the author revealed two more.

It cannot be definitely stated that the voice of this species has been heard. Success has not accompanied efforts at tracing calls seeming to terminate in the characteristic crescendo.

Hyla cinerea cinerea (SCHNEIDER).—Very abundant. In the winter it hibernates beneath bark, in rotten stumps and logs, and in sawdust piles. As soon as the weather becomes warm and settled it may be found in the brackish coastal marshes. This type of summer habitat seems to be preferred because of the reeds and tall grass which it ascends at night to sing in a loud, monotonous chorus.

Specimens in captivity ate horseflies, damsel-flies and small butterflies and moths.

Hyla crucifer WIED.—Common in the winter and early spring. At night it sings from both the grassland pools and swamps. During the day it may occasionally be found under the bark of stumps situated in the swamps.

Hyla femoralis LATREILLE.—During the winter of 1929–1930, several specimens were taken from beneath the bark of stumps and logs and the following summer two or three were attracted by the insects about a sugary mass of sap. When the rains came in July, 1931, countless numbers appeared in the swamps but none was observed in copulation.

Hyla gratiosa LECONTE.—On the night of April 18, 1931, about five miles north of Biloxi, I became aware of a strange chorus of frogs. When they were finally traced and discovered to be of this species, it became apparent that they had first been heard at a distance of a mile and a half. Their combined voices at close quarters were almost deafening. The call consists of a single, harsh, guttural croak that might be compared to the bark of a dog or the sound produced by jerking through the closed fist a rosined string attached to an empty tin can.

The situation which they had chosen for their breeding was a large pond about three feet at its greatest depth, grassy about the edges and with many cypress and gum trees standing in the water. Seven specimens were taken from various objects near the shore and some distance out. The following night the pond was again visited and ten more specimens obtained.

During the rainy spell three months later a number of these frogs was found breeding in the swamps at widely separated localities.

Hyla squirella LATREILLE.—A common frog and probably more abundant than it appears for it is not easily seen on a limb or reed and, during the spring and summer, that is where they are found most frequently. This habitat indicates their association during this season with *Hyla c. cinerea.* They hibernate beneath the bark of pine stumps and logs but are seldom taken in the winter even from these situations.

On February 19, 1930, a specimen was taken on Cat Island from a pine stump and on March 12, four were found on Horn Island in a similar situation.

Hyla versicolor versicolor (LECONTE).—This tree frog is commonly found at all seasons. Winter usually finds them concealed within some decayed stump or log but after they have congregated about the pools in the spring and have dispersed, they may be seen occasionally upon the low vegetation in the swamps.

Several specimens were taken from a cavity in an oak tree about seven feet from the ground during the month of January, 1931.

Rana æsopus (COPE).—This species has been abundantly found throughout the months of October, November, and December in the burrows made by *Gopherus polyphemus.* When the temperature rises, these frogs become active and may be seen sitting in the openings of the tunnels down which they disappear at the least indication of danger. In colder weather they are never at the surface and can only be taken by digging to the bottom of the gopher hole, where never more than one is found in company of one or two turtles.

The only specimen taken near the coast was found in a pool of water on January 25, 1931. Ten or twenty miles inland gopher holes are numerous and it is in this region that this frog has been found in quantity.

Rana catesbeiana SHAW.—Although undoubtedly abundant in this region, the bullfrog is not taken in great numbers. The very large individuals are less often secured than the medium and smaller sizes. They have an obvious preference for small streams during the spring and summer and eggs have been found in such places in early May. Drain pipes seem to be a favorite place of concealment during cold weather.

Rana clamitans LATREILLE.—The green frog is encountered very frequently and is found in practically any suitable situation. During the warmer periods of winter and throughout the summer, they have been seen in the swamps, grasslands and small streams. In December and January, 1929–1930, several medium-sized specimens were dipped from a deep spring. An immature example kept in captivity fed on grasshopper nymphs (*Rhomælia microptera*), horseflies, butterflies and moths. It never swallowed the latter, however, always pushing them out of its mouth with its forefeet.

Rana sphenocephala (COPE).—A common frog, and to be collected throughout the year. It breeds in February but has been known to begin this activity in December.

An examination of several hundred frogs leads to the conclusion that the majority of specimens agree with descriptions of *R. sphenocephala* with a few exhibiting tendencies toward intergradation, and a small percentage having some of the characters of *Rana pipiens.*

Rana grylio STEJNEGER.—The southern bullfrog is a pond-inhabiting species, locally called "lake frog." During the month of April, 1931, this species was found on Point aux Chenes, Jackson County, in a vast fresh-water marsh that is separated from the sea by a narrow ridge. At dusk they start calling and their voices closely resemble a series of grunts.

This frog was also discovered in the pond described under *Hyla gratiosa.*

Rana grylio emits an unmistakable dank, musty odor when captured or handled and a slime that is bitter to the taste.

The two species *R. grylio* and *R. catesbeiana* have never been found in company.

Rana heckscheri WRIGHT.—The range of this form as previously known was limited to the coastal regions of Georgia and Florida. Its capture at Biloxi extends its range considerably to the west.

On September 12, 1931, the rivers and creeks were swollen and out of their banks from the heavy rains that had been falling. Cypress Creek, about two and a half miles north of Biloxi, covered the road and the bridge spanning it to a depth of from two to four feet. In this overflow the large, conspicuous tadpoles were very abundant. After the waters had receded more specimens were taken from a small pool left by the falling stream. Some time later specimens of about 40 mm. in length with the tail absorbed and the legs well developed were taken

from ponds and ditches located in the once flooded area between Cypress Creek and the Tchoutacaboueffa (Tchula Cabawfa) River.

The unusual feature of these captures is the fact that never before have these amphibians been seen in this region. The very ponds and ditches from which they were taken had been seined many times and with no other result than the securing of bullfrog tadpoles. The ensuing month witnessed the capture of the last specimens and since then none has been seen. Cypress Creek is deep, narrow and filled with snags and the banks are thickly covered with tangled vegetation, all of which make seining an impossibility. In the depths of this and other similar streams the tadpoles live, no doubt, and because of these conditions they succeed in remaining concealed from sight until the rising waters swirl them to the surface.

Little is known concerning the habitat of the adult frog in this region. One mature example has been taken. On March 18, 1930, it was discovered in full daylight sitting on the bank of a small stream in the middle of a swamp. It was not at all timid and a noose was easily slipped over its head. At that time I was unacquainted with *heckscheri* and the puzzling specimen was doubtfully referred to *catesbeiana*.

The specimen measures 150 mm. from snout to anus. The back is tuberculate and with the tubercules more or less regularly disposed. Along the side they become slightly elongated and connected to form two rows 4 mm. apart extending from the fold behind the ear to the insertion of the femur. The dorsal surface is a medium dark brown. There are spots on the lower jaw and disconnected markings on the femur.

Gastrophryne carolinensis (Holbrook).—This frog is common but is difficult to find except by a diligent search. During the winter and summer, specimens may be discovered beneath logs, in and near swamps, and other moist places. On a summer night their shrill buzzing from the swamps serves as a guide to their location and capture, but even when only a few feet away they are difficult to find, for they usually sit in the mouths of their burrows or are hidden in clumps of grass.

Part II.—REPTILIA

Loricata

Alligator mississipiensis (Daudin).—The alligator, despite the avidity with which it is hunted, is still to be found in comparatively large numbers. Their dens, to which they retire during the colder months, are found in the coastal marshes, rivers, lagoons, and swamps.

Several specimens have been seen swimming in the bay of Biloxi and an individual a little over six feet in length was taken with a cast net from the waters of the bay.

On the afternoon of August 4, 1931, Mr. Springer and I discovered on the north shore of Biloxi Bay a nest containing twenty-five eggs. It was constructed of reeds, grass, and small sticks, and was built around two small bushes situated about twenty feet from the edge of a brackish marsh. A well-worn trail from the nest to the marsh gave the clue to its presence. In a remote and unfrequented place, there was slight chance of its discovery by a casual observer.

SQUAMATA

Anolis carolinensis VOIGT.—A very abundant lizard. Hibernates under logs and in rotten stumps. Common on the ground and in trees in the swamps and pine forests during the summer.

Sceloporus spinosus floridanus (BAIRD).—One specimen found about three miles west of Biloxi on March 9, 1930.

Sceloporus undulatus undulatus (LATREILLE).—Abundantly seen in the pine forests whenever the temperature permits reptilian activity.

Ophisaurus ventralis (LINNÉ).—Commonly taken throughout the summer in wet, grassy places.

On a cold day in January a specimen was found about a foot beneath the surface of the ground near the base of a stump. It was quite dormant but soon exhibited signs of life when placed near a fire.

An example was taken from Horn Island, March 29, 1930.

Cnemidophorus sexlineatus sexlineatus (LINNÉ).—These lizards are never seen in the winter and do not come forth from hibernation until April, when the temperature is usually warm and settled. They are abundant in the pine forests and are frequently seen in sandy roadways.

They are very common on Horn Island, where they prefer the sandy situations about palmetto clumps, in the thickest parts of which they make their holes.

Leiolopisma laterale (SAY).—Very common on the forest floor during the warmer parts of the year. Hibernates in old logs and stumps.

Eumeces fasciatus (LINNÉ).—While this species is abundant it usually remains concealed under bark and logs throughout the entire year.

Large specimens have been taken on the coast but no red-heads have been seen. Twenty and more miles inland this color phase has been found.

SERPENTES

Farancia abacura (HOLBROOK).—Undoubtedly common but only three specimens have been secured. Two of these were taken in daylight: one, May 15, 1931, on the bank of a stream and the other, April 15, 1931, while crossing a road. In July 1931, the third specimen was found. It was also taken on a road but was small and was secured at night.

Diadophis punctatus stictogenys COPE.—The ring-necked snake is commonly found during the entire year; the habitat, under the bark of stumps and logs, remains unchanged through the seasons.

Heterodon contortrix (LINNÉ).—A serpent that is frequently encountered throughout the summer and occasionally in the winter during the higher temperatures. Outbuildings and fields seem to be the favorite haunts of this species.

A large specimen of the black phase, which regurgitated two toads upon handling, was found in a barn in June, 1930. On November 30, 1929, a specimen was taken from the water about five hundred yards from the shore in the bay of Biloxi.

Heterodon simus (LINNÉ).—Much less common than the foregoing species. One small specimen found in a thick woods three miles north of Biloxi on July 15, 1931, and three examples in midsummer south of Vestry.

Opheodrys æstivus (LINNÉ).—The earliest record of capture is April 6, 1930. Later in the summer they are not infrequently observed in vines and bushes.

Coluber constrictor constrictor (LINNÉ).—A specimen of this snake was found in January with its head and several inches of its body protruding from a hole in a dry field. Other than this the hibernating habits of this species are not known. A few specimens have been taken in the open in February but they are not seen in abundance until the weather has become hot. At this time they are common in grassy fields and in upland woods.

Coluber flagellum flagellum (SHAW).—A few specimens have been found in the summer in the same type of habitat frequented by *C. c. constrictor*.

Elaphe guttata (LINNÉ).—Corn-snakes are occasionally found at all seasons. They hibernate in hollow trees and rotten stumps and in the summer are generally distributed through the swamps and pine forests. Specimens of a foot in length are the most common, very large examples are rare and are taken only in the warmer months.

Elaphe obsoleta confinis (BAIRD AND GIRARD).—This snake does not appear to be quite as common as the preceding species but is somewhat similar in habits. It seems to enjoy the shelter of farm buildings where, according to some farmers, it has been seen to catch mice. During the winter occasional specimens are to be discovered beneath bark and in hollow trees. On a warm day, February 4, 1930, one was taken from the top of a high stump.

Leimadophis flavilatus (COPE).—Three specimens of this species have been found. Two were discovered in March beneath the bark of pine stumps and the third one about a month later under a pile of straw in company of an *Ophisaurus ventralis.*

Lampropeltis elapsoides elapsoides (HOLBROOK).—Winter and spring are the seasons in which this species is occasionally found in the crevices and hollows beneath the bark of pine stumps and logs. During the winter of 1929–1930 about fifteen individuals were taken from these situations. The capture of a specimen on May 25 appears to be the latest record for this type of habitat. On a night in June a large female containing eggs was discovered crawling across a street on the outskirts of Biloxi and this is the only instance in which a specimen has been found in any situation other than the one described. What becomes of it during the summer remains unknown. Large areas of stumps and logs have been worked over in this season with no success. The example of the capture in June might possibly indicate that with the advent of warm weather it assumes a roving disposition.

Captive specimens have readily eaten *Leiolopisma, Eumeces,* and *Potamophis,* while consistently refusing *Diadophis.*

Lampropeltis getulus holbrooki (STEJNEGER).—This species is common at all seasons and is usually found in the open pine woods and along the edges of swamps. A large example, discovered in the summer beneath a piece of tin, quickly disappeared down a hole upon removal of the shelter, but it was necessary to dig only about a foot to secure it. During the winter no large specimens have been seen, small ones alone

having been taken from under the bark of stumps and logs. It is not until spring that mature individuals make their appearance.

The transverse lines are present in practically all specimens.

Lampropeltis rhombomaculata (HOLBROOK).—A species not previously recorded west of Mobile, Alabama. Two adults were taken at different times in fields not far from stands of timber in April, 1931, and during the same month another specimen, in which life was almost extinct because of a blow that it had suffered on the head, was discovered on the highway. In September, 1930, an immature example was found under a log.

The color patterns of all four specimens were distinct.

Sex	Length	Gastrosteges	Urosteges	Oculars	Temporals	Scale Rows	Infralabials	Supralabials	No. Dorsal Blotches
Male	970	206	50	1–2	2–3–4	21–21–19	9–9	7–7	51
Male	1000	207	52	1–2	2–3–4	21–21–19	9–9	7–7	50
Female	244	206	37	1–2	2–3–4	21–21–19	8–8	7–7	68

Cemophora coccinea (BLUMENBACH).—Two specimens of this species have been found. One was discovered dead on a road July 9, 1931, and the second example was found under a piece of bark near a swamp December 10, 1931.

Natrix clarkii (BAIRD AND GIRARD).—Found occasionally in the salt-water marshes during the summer.

On Horn Island, in a large, shallow pool surrounded by marsh-grass and abundantly supplied with water-snakes and alligators, this species is common.

Natrix cyclopion (DUMÉRIL AND BIBRON).—Very common in the swamps and brackish marshes. This species was also found in the pool mentioned above.

Natrix fasciata fasciata (LINNÉ).—Rivals the preceding species in abundance and inhabits the same situations, though not found in such immediate proximity to salt water.

The body cavity of a large female was opened on August 11, 1931, and found to contain twenty-three well-developed young measuring 225 to 230 mm. in length.

Natrix fasciata confluens BLANCHARD.—Three examples taken at night from a pond during the month of July, 1931. They were found to associate with *N. cyclopion* and *N. f. fasciata* but not to intergrade with the latter.

Natrix rhombifera (HALLOWELL).—Occasionally found in thick swamps.

In July, 1931, a specimen was taken measuring five feet six and one-half inches. The stomach contained a large sunfish and a bullfrog of seven inches body length.

Natrix rigida (SAY).—A small specimen was found under a board on the edge of a pond March 5, 1931, and the following month another, larger specimen was taken from a similar situation.

Natrix sipedon erythrogaster (FORSTER).—One specimen from the Pascagoula River, Jackson County, April 20, 1930.

Infralabials 10, gastrosteges 152, scale rows 23, length 35 inches. Color in formalin: head and dorsal surface of body uniform greenish black. Ventral side of head and body whitish.

Storeria dekayi (HOLBROOK).—A specimen found November 8, 1929, and another in the summer of 1930.

Storeria occipito-maculata (STORER).—Four specimens found under the bark of pine stumps: two in September and October, 1930, and two in the summer of the following year.

Virginia valeriæ elegans (KENNICOTT).—Occasionally found under logs throughout the year.

Potamophis striatulus (LINNÉ).—On February 12, 1930, twenty specimens were taken from beneath the bark of pine stumps and logs within an area of one hundred square yards. Numbers were found congregated under the same piece of bark. Except for this single instance this species is found only occasionally beneath logs and in stumps.

Thamnophis proximus (SAY).—A large example of this species was found in a marsh on Cat Island, February 19, 1930, and a smaller specimen was taken twelve miles south of Vestry near the Harrison-Jackson county-line on November 10, 1931.

	Sex	Length	Gastrosteges	Urosteges	Supralabials	Infralabials	Scale Rows	Tail Ratio	Dorsal Stripe
Cat Island	Female	1268	175	118	8–8	10–10	19–17	0.34	Present
Vestry	Female	519	154	110	8–8	10–10	19–17	0.30	Present

Thamnophis sauritus (LINNÉ).—Found occasionally throughout the year on the coast and farther inland. It prefers wet meadows and the vicinity of ponds. Stomachs of several specimens contained *Acris* and *Pseudacris* and captive specimens readily ate these species of frogs.

Thamnophis sirtalis sirtalis (LINNÉ).—This species has not been found on the coast. A specimen was taken twelve miles south of Vestry on September 10, 1931, and a month later an example of the *ordinatus* type was found in the same locality.

Tantilla coronata (BAIRD AND GIRARD).—Several specimens taken during the winter months below the surface of the ground on the interior of pine stumps. An individual found beneath a log in July, 1931, and at about the same time another specimen under the bark of a stump.

Agkistrodon piscivorus (LACÉPÈDE).—This species is very common in the swamps. During the colder periods of winter they have been found in this habitat under logs and in stumps.

In the summer they are numerous about the margins of pools and while the majority will immediately take refuge in the water when disturbed, some will lie in a loose coil with the mouth opened to almost 180 degrees and rapidly vibrate the tail. When so disposed no amount of prodding can induce them to move. At this season they appear to be more active at night, crawling out upon the banks and about the roots of trees extending into the water. On one evening a large specimen was observed pushing about on the surface of the water a small, dead pike. It was evident from the wound on the belly of the fish that the moccasin was responsible for its death. At another time a medium-sized example was found on the bank swallowing a specimen of *Hyla gratiosa*.

In captivity specimens have eaten frogs, mice, birds, dead fish, pigmy rattlers and copperheads. Toads have been offered and even though the snakes had been without food for some time they were refused.

Sistrurus miliarius (LINNÉ).—In winter this snake is not often secured, but during the summer captures are not infrequent. Specimens taken in the former season have been found under logs in the dryer sections of swamps and, while those captured in the warmer parts of the year were usually on the move, they were consistently seen in the vicinity of lowland streams and dense thickets.

Captive specimens have fed well on young white rats.

Crotalus species.—There have been no recent records of large rattlers on the coast but inhabitants twenty to thirty miles inland report that they are common. However, the author has been unsuccessful in securing a specimen. Even though the reports are no doubt true, it is impossible to determine from the descriptions whether they are *Crotalus adamanteus* or *Crotalus horridus.*

TESTUDINATA

Due to the lack of extensive turtle collecting the following list is probably incomplete.

Sternotherus carinatus (GRAY).—One specimen found near Biloxi in June, 1931.

Sternotherus odoratus (LATREILLE).—One specimen taken September 24, 1930.

Kinosternon subrubrum subrubrum (LACÉPÈDE).—The turtles are very abundant in ponds throughout the summer, and may on occasion be discovered in the winter in small pools in the swamps.

Chelydra serpentina (LINNÉ).—A large specimen taken from an isolated pond in April, 1931, and several others of smaller size from sluggish streams and ponds during the summer.

Terrapene carolina triunguis (AGASSIZ).—This species has been commonly taken throughout the year in the meadows, but does not seem to be as numerous as the following.

Terrapene major (AGASSIZ).—This turtle seems to prefer the wooded swamps and is abundant at all seasons. In December, 1929, a pair was found a short distance down what appeared to be a burrow of *Gopherus polyphemus.* Several specimens kept in a shallow pool were frozen solid in the ice for about twenty-four hours but when thawed out seemed to be perfectly healthy.

In captivity they will eat practically any vegetable or animal matter and have been observed in copulation both winter and summer.

Malaclemys pileata pileata (WIED).—One small specimen and two adults were taken in the marshes about Biloxi during the summer of 1931. They are common along the east coast of the Louisiana Marsh and are caught in numbers in seines and trawl nets.

Graptemys pseudogeographica kohnii (BAUR).—One small specimen found in Pascagoula River, Jackson County, on July 20, 1930.

Pseudemys alabamensis BAUR.—A large specimen was taken on hook and line from the Tchoutacabouffa River on October 22, 1929.

Pseudemys concinna (LECONTE).—A large individual was found on the landward beach of Horn Island, on June 28, 1930. It was very slow in its movements and seemed to be near death. It had probably been carried out to sea and become stranded on the island. The carapace and plastron of another fresh-water turtle was found nearby, but the species could not be determined with accuracy.

Several small specimens were found on the banks of lagoons along the Tchoutacabouffa River during the summer of 1931.

Deirochelys reticularia (LATREILLE).—A large specimen found in the woods near a stream about ten miles north of Biloxi in March, 1931. Others taken in the following summer and spring from ponds and swamps indicate that it is not a fluviatile species.

Gopherus polyphemus (DAUDIN).—Fifty specimens were brought in from twelve miles south of Vestry near the Harrison-Jackson county-line during the months of October and November, 1930. All were dug from their holes.

The burrows of these turtles, which averaged about seven feet deep, ran in at a slant, were enlarged at the termination, and situated on slopes. Two specimens were frequently found occupying the same hole.

Chelonia mydas (LINNÉ).—One small specimen taken in a trawl net near Breton Island, Louisiana, in March, 1931.

Caretta caretta (LINNÉ).—The loggerhead is frequently taken in trawls off the Mississippi coast, specimens of ten to sixty pounds having been seen. The fishermen report that they have secured turtles weighing as much as six hundred pounds. Specimens of this size are probably of the above species.

On moonlight nights in June these turtles have been seen on the seaward beaches of the outlying islands. Though I have failed in finding nests, the hunters say that at this time the reptiles lay their eggs.

Amyda ferox (SCHNEIDER).—No records for Harrison County but this species undoubtedly occurs here as soft-shell turtles have been seen and specimens taken in the adjoining Hancock County.